

# **Sea Basing: a Way to Project Land Combat Power**

**A Monograph  
by  
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## **Abstract**

SEA BASING: A WAY TO PROJECT LAND COMBAT POWER by Major Stuart A. Hatfield, United States Army, 44 pages.

As described in the 2004 National Military Strategy, the US military must be capable of rapidly projecting military power to achieve full spectrum dominance over any situation or against any adversary in any theater. The US military projects land power through a combination of forward based forces, deployed forces from the continental United States (CONUS), and prepositioned equipment. Forward deployed forces are relevant and ready only if they are in the right location to rapidly respond to a crisis. CONUS based forces are difficult and slow to deploy. While some may rapidly deploy by air, nearly 80% of their equipment and supplies required to sustain the deployment still travels by sea. Additionally, CONUS based forces require significant access to air and sea ports of debarkation in order to conduct reception, staging, onward movement, and integration (RSOI) to marry up personnel with their equipment before going into combat.

Prepositioned equipment is relevant and ready only if it is in the right location to rapidly respond to a crisis. Operation Iraqi Freedom (OIF) in March 2003 was a stunning success for the Department of Defense's prepositioning programs. For twelve years following Operation Desert Storm, the OIF demonstrated the importance of prepositioned equipment to rapidly project and build-up land combat power. However, OIF also demonstrated the dependence upon guaranteed access to port facilities and staging areas in order to complete the RSOI process.

Seabased prepositioned forces and equipment provides the joint commander flexibility to maintain a forward presence, rapidly deploy forces from CONUS, and to project land power from sovereign platforms that are operationally independent of terrain.

Current sea based capabilities include the US Navy's Sea Base, Sea Strike, and Sea Shield system of systems concept. Three USMC Amphibious Ready Groups (ARG) operate in the Pacific, the Mediterranean and Indian oceans, each with a Maritime Preposition Force (MPF) of prepositioned equipment to support the rapid introduction of additional USMC forces. The US Army Prepositioned Set 3 (APS-3), based in Diego Garcia provides combat, combat support, and combat service support equipment to rapidly open a theater of operations and support the flow of follow-on forces.

The projected requirements for the 2020 environment are dominant maneuver, precision engagement, full dimensional protection, and focused logistics.

The projected shortfalls of current sea based forces and equipment for the future environment include a continued reliance on existing land based infrastructure, an inability to guarantee military and political access, and insufficient air and sea lift to meet operational concepts and timelines.

The two primary options for a future sea base are a systems of systems Joint Regional Flotilla (JRF) concept and an all inclusive Joint Mobile Offshore Base (JMOB). The JRF modernizes the current fleet, while the JMOB provides an enormous modular superstructure equivalent to a mobile island with a 5000-foot airstrip and world class docking facilities.

The US military can best use sea based, prepositioned equipment to project land power as part of an interdependent joint team to maximize responsiveness and flexibility for the joint force commander.

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## INTRODUCTION

Operation Iraqi Freedom (OIF) in March 2003 was a stunning success for the Department of Defense's prepositioning programs. For twelve years following Operation Desert Storm, the US Army maintained a heavy brigade combat team set of equipment in the Kingdom of Kuwait in order to deter Iraqi aggression, defend Kuwait, and reassure our allies in the region. As the second war with Iraq loomed closer, additional prepositioned sets of Army and Marine equipment passed through crowded seaports of debarkation while Soldiers from the 3<sup>d</sup> Infantry Division and Marines from the I Marine Expeditionary Force rushed to Kuwait from their bases in the continental US to mount equipment and prepare for the long march to Baghdad. The 4th Infantry and 1st Armored Divisions, who had to bring their equipment from their home stations by ship, quickly followed them.

The US military rapidly projects land power through a combination of forward based forces, deployed forces from the continental United States (CONUS), and prepositioned equipment.<sup>1</sup> Forward deployed forces are relevant and ready if they are in the right location to rapidly respond to a crisis, such as Germany during the Cold War or South Korea today.

CONUS based forces are difficult and slow to deploy. While some may rapidly deploy by air, nearly 80% of their equipment and supplies required to sustain the deployment still travels by sea. The 82d Airborne Division's deployment by air to the deserts of Saudi Arabia in August 1990 as part of Operation Desert Shield is a prime example. However, they had to rely on sea based Marine forces for food, water, and other critical supplies until the theater logistics distribution system could be opened allowing their supply system to catch up with them. Additionally, CONUS based forces require significant access to air and sea ports of debarkation in order to conduct reception, staging, onward movement, and integration (RSOI) to marry up personnel with their equipment before going into combat.

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<sup>1</sup> Logistics Management Institute (LMI) *Strategies for Worldwide Pre-positioning*, August 2003, 1-1

While prepositioned equipment stores also require RSOI access, it can be very relevant and ready if in the right location and well maintained. During the Cold War, the prepositioning strategy focused on defending Western Europe from the Warsaw Pact forces. After the disintegration of the Soviet Union and Desert Storm, the prepositioning strategy shifted to responding to a regional crisis in either Southwest Asia or Southeast Asia.

OIF demonstrated the importance of prepositioned equipment to rapidly project and build-up land combat power. However, OIF also demonstrated the dependence upon guaranteed access to port facilities and staging areas in order to complete the RSOI process, a success in Kuwait but a failure in Turkey. Fearing a resurgence of Kurdish nationalism, the Turkish Parliament refused to allow access to nearly 40,000 US troops, thus preventing the US 4<sup>th</sup> Infantry Division from opening a Northern front in the attack on Iraq.<sup>2</sup>

As described in the 2004 National Military Strategy, the US military must be capable of rapidly projecting military power to achieve full spectrum dominance over any situation or against any adversary in any theater.<sup>3</sup> With a reduction in its forward deployed forces in both Europe and Asia, the US will increase its reliance on prepositioned forces to rapidly respond to a crisis. Those prepositioned forces can be either land based, as in Kuwait and Korea, or they may be sea based.

Land based prepositioned equipment provides the joint commander a significant forward presence and the capability to rapidly deploy forces from CONUS and to project land power. However, the joint commander may be restricted by the diplomatic whims of the host nation, who may not support a conflict with its neighbor. Recent examples of this form of access denial include the Turkish situation mentioned above and the prohibition of using Saudi Arabian

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<sup>2</sup> Gerry J. Gilmore, "Disappointed Wolfowitz Still Supports US-Turkish Defense Ties," *American Forces Information Service*, 07 May 2003; available from <http://www.globalsecurity.org/military/library/news/2003/05/mil-030507-afps01.htm>; Internet; accessed 16 November 2004.

<sup>3</sup> Richard B. Meyers, *National Military Strategy of the United States of America*, Washington D.C.: Government Printing Office, 2004.



airbases for US and Coalition strikes on Iraq. Land based prepositioned equipment must also be in the right place to be relevant. Military Sealift Command had to transport the prepositioned equipment based in Qatar and Italy to Kuwait.

Seabased prepositioned forces and equipment provides the joint commander flexibility to maintain a forward presence, rapidly deploy forces from CONUS, and to project land power from sovereign platforms that are operationally independent of terrain. Expeditionary operations are fundamentally distinguished by an uncertainty of location, a requirement to fight upon arrival, and an expectation of an austere environment.<sup>4</sup> Operation Enduring Freedom (OEF) in Afghanistan epitomized the expeditionary mindset with the requirement to conduct a rapid decisive operation, including a forcible entry and a regime change, within a landlocked country 450 miles from the nearest coast and far from any long-term U.S. presence.

How can the US military best use sea based, prepositioned equipment to project land power? Specifically, how can the US Army best contribute sea based prepositioned equipment as part of an interdependent joint team to maximize responsiveness and flexibility for the joint force commander? Before these questions can be answered, shortfalls between current sea based capabilities and projected requirements in the 2020 timeframe must be identified.

Two courses of action (COA) are offered as potential solutions: a regional flotilla concept and a floating joint mobile offshore base. Both are analyzed and compared according to the following evaluation criteria: responsiveness, flexibility, joint interdependence, and vulnerability.

Although cost is the determining factor for the adoption of new systems in the Department of Defense, the scope of this monograph does not permit a detailed analysis of cost considerations over the lifecycle of each COA.

While the nation is committed to the Global War on Terror, the Department of Defense is undergoing a transformation. Within the National Defense Strategy of 2004, the Secretary of

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<sup>4</sup> Les Brownlee and Peter J. Schoomaker, "Serving a Nation at War: a Campaign Quality Army with Joint and Expeditionary Capabilities", *Parameters* XXXIV, no. 2 (Summer 2004): 9.

Defense provides specific guidance to focus the services as they transform, including: “Operating from the commons: space, international waters and airspace, and cyberspace”; and “projecting and sustaining US forces in distant anti-access environments”.<sup>5</sup> Each service is seizing the opportunity, as well as the resources that accompany a wartime setting, to transform itself to best meet the requirements of the contemporary operating environment. The exploitation of sea based land power, as part of a standing joint task force, may be the pinnacle of transformation.

## CURRENT CAPABILITIES

The projection of land power from the sea is a concept that has hounded men for as long as man has wanted to strike at his foe across a non-fordable body of water. Armies were transported by ship, discharged onto a quiet segment of shore, and then maneuvered overland to seize their objectives. From the Peloponnesian War to the Gallipoli campaign in World War I, experts and critics alike considered it sheer folly, even suicidal, to consider an amphibious assault onto a defended beach in daylight.<sup>6</sup> The development of amphibious doctrine and technology before and during World War II focused on the defense and seizure of distant advance bases to support naval, air, and ground operations as in the Pacific island-hopping campaign. Other than the capability for vertical envelopment with the helicopter, a Soldier or Marine on Okinawa in 1945 would recognize much of the doctrine and equipment types used in amphibious operations today.

In today’s political environment, the position and use of forward bases are subject to the whims of Allies and regional partners. They may have their own long-term security concerns about US forces conducting strikes against their neighbors. They may also dictate the types and numbers of US troops on their soil by putting a force cap in the status of forces agreement. In

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<sup>5</sup> Meyers, National Military Strategy: 20.

<sup>6</sup> Philip A. Crowl and Jeter A Isely, *The U.S. Marines and Amphibious War*, (Princeton, New Jersey: Princeton University Press, 1951), 20-21.

extreme cases, US troop activities outside of the base may be regulated, as with female US service members' dress and actions within Saudi Arabia.

“Technology has been unable to eliminate the tyranny of time and distance that challenge the deployment of military forces across the globe.”<sup>7</sup> In an attempt to overcome this restraint and improve strategic responsiveness, the US military has adopted a global prepositioning strategy with land and sea-based systems. While land-based systems must be constantly reassessed for location, relevance, and capability, sea-based systems can literally move with the tide of the changing global security environment. This flexibility is ideal for the new Standing Joint Task Force (SJTF) under each of the Regional Combatant Commanders (RCC). The capability of the RCC to project land power from the sea varies according to the contribution of each service.

## **Naval Dominance of the Seas**

The United States Navy maintains full spectrum domination of the world's sea-lanes through unrivaled control of the surface, subsurface, and air. The Navy's vulnerabilities still include mines, land based weapons, and asymmetric threats while in port, as with the USS Cole bombing. With the ocean covering 70% of the Earth's surface, the exploitation of the sea-lanes as maneuver space is critical. International common areas include space, international waters and airspace, and cyberspace. The Navy's domination of the ocean means that the sea is maneuver space for the US, but an obstacle to its adversaries. The sea base exploits this freedom of maneuver by providing a platform for force projection unconstrained by alliances or political limitations. Furthermore, activities at the sea base can remain hidden from an adversary and safe from attack. Satellites have more difficulty locating and targeting a sea base than a land base. Therefore, land bases are more vulnerable to terrorist attacks, as well as land based conventional forces.

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<sup>7</sup> LMI, 1-1.

The Chief of Naval Operations' vision, Sea Power 21, provides focus for the Navy's transformation towards three critical functions: Sea Strike, Sea Shield, and Sea Base. Sea Strike is the persistent projection of precise offensive air and land power from the sea. Sea Shield is the defensive posture to protect against naval, land, air, and tactical ballistic missile threats. Sea Base is the integrated afloat positioning of joint assets to command, control, and sustain offensive and defensive power projection from the sea. Exemplifying the expeditionary model, sea based forces are less dependent upon existing infrastructure, operationally independent, and immediately employable.

The US Navy currently provides the security and the infrastructure of the sea base through synchronization of the Fleets, Carrier Battle Groups, Amphibious Ready Groups (ARG), and Maritime Preposition Force (MPF). The Navy also has responsibility for Military Sealift Command (MSC), which manages all US military sealift capability, including the Army's preposition ships.

## **MPF**

As America premier expeditionary force, the US Marine Corps remains forward deployed and ready to execute any mission.<sup>8</sup> Marines operate as Marine Air-Ground Task Forces (MAGTF), task organized with integrated air, ground, and combat service support elements under a single headquarters. MAGTFs are scaleable depending on the requirement or crisis. A Marine Expeditionary Unit (MEU), a MAGTF of up to 3000 Marines, is continuously forward deployed in support of the RCCs, with a MEU in the Mediterranean, a MEU in the Indian Ocean, and a MEU in the Pacific. The MEUs are embarked on amphibious assault ships in the ARG, and they are capable of conducting a wide range of operations from humanitarian assistance to forced entry, including limited special operations.

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<sup>8</sup> Marine Corps Strategy 21, 1.

Should a mission require a larger force than a MEU, a Marine Expeditionary Brigade (MEB), a MAGTF of up to 20,000 Marines, can fly-in-echelon to marry up with sea based pre-positioned equipment of the MPF. The MPF is divided into three Maritime Preposition Squadrons (MPSRON). MPSRON One operates in the Mediterranean and is supported by II MEF (Marine Expeditionary Force) at Camp LeJeune, NC. MPSRON Two operates out of Diego Garcia and is supported by I MEF at Camp Pendleton, CA. MPSRON Two supports the Pacific theater is supported by III MEF in Okinawa, Japan. Each MPSRON provides forward presence with the ability to sail to any crisis within their regions in seven to fourteen days. However, they can be repositioned to demonstrate US resolve and if required, reduce the time needed to respond to a specific crisis.<sup>9</sup>

The goal of the MPF is to establish a MAGTF ashore within ten days of arriving at the port. Each four to five ship MPSRON provides the MEB with air, ground, combat service support, and joint command and control capabilities; a field hospital; heavy engineer equipment; and an expeditionary airfield, as well as 30 days of supplies for sustained operations ashore. The MPSRON can download the equipment pier side or, if required, at sea using integrated landing craft, causeways and on-board cranes. The in stream discharge process is limited by weather and sea state, and it doubles the force closure time to up to twenty days for the MEB. Should the mission not require the entire MEB, a Special Purpose MAGTF can selectively off load only the equipment and supplies it requires for its mission. This capability is very advantageous for missions such as humanitarian support, where combat service support capabilities and supplies are more desirable than combat power. The MPSRON is capable of pumping both bulk water and fuel to support the MAGTF ashore in austere environments.

Once the MAGTF is established ashore, it can then execute its mission, either independently or as part of a joint task force. Often, the MAGTF may be required to conduct

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<sup>9</sup> LMI, 3-8.

forced entry operations to secure a port or airfield so that the Army can enter and establish the theater.

### **APS-3**

The Army has a total of five reinforced Brigade Combat Team (BCT) equipment sets prepositioned around the world, but only the Army Prepositioned Set 3 (APS-3) is sea based. Based in Diego Garcia, it consists of thirteen ships: eight Large Medium Speed Roll-on Roll-off ships (LMSR), four container ships, and an auxiliary crane ship. The four LMSRs with the BCT set contain the equipment for two armor, two mechanized infantry, one engineer, one field artillery, and one combat service support battalions.<sup>10</sup> The BCT set is further reinforced with multiple launch rocket systems (MLRS), military police, air defense, reconnaissance, and military intelligence support beyond that normally associated with the BCT.

The remainder of the ships within APS-3 contain the theater and corps logistics base, including a theater opening force module (TOFM), port operations unit, a transportations unit with line haul capability, a combat surgical hospital, and water purification equipment. APS-3 maintains fifteen days of sustainment for the BCT and thirty days of sustainment for the expected follow-on corps until the sea lines of communication are operational. Significantly, the ammunition ships contain three full combat loads for the entire corps. Like the MPF, APS-3 did have integrated landing craft and causeways for in-stream offload; however, this equipment has been reassigned to the Southwest Asia (SWA) and Northeast Asia (NEA) Theaters for ongoing port operations.

APS-3 was designed and positioned to flexibly reinforce the land based prepositioned sets, either APS-5 in SWA (Kuwait and Qatar) or APS-4 in NEA (Korea), in response to a major regional contingency in either theater.

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<sup>10</sup> Robert A. Chilcoat and David S. Henderson, Army Prepositioning Afloat, *Joint Forces Quarterly*, Spring 1994, 54.

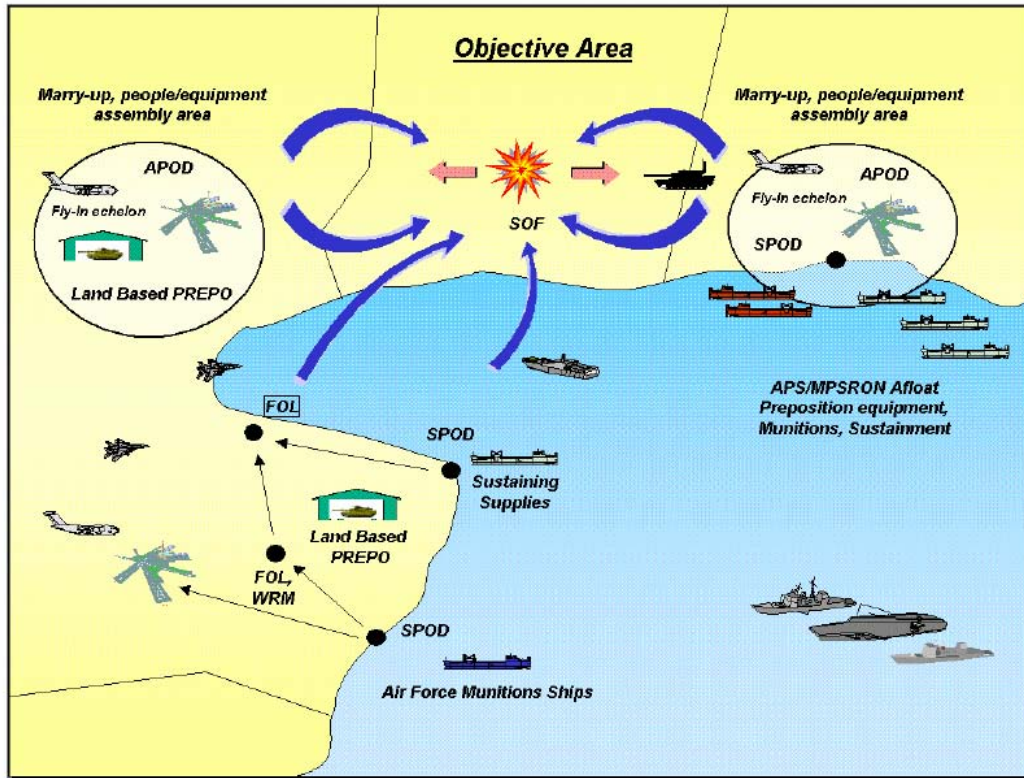


Figure 1: Current Capabilities of Prepositioned Equipment<sup>11</sup>

Prepositioned equipment, stored either on land or at sea, requires significant infrastructure (see Figure 1) in the form of aerial ports of debarkation (APOD) and sea ports of debarkation (SPOD) in order to complete the marry-up of people and equipment during RSOI. APODs are required to receive the fly-in-echelon of forces from their home station. SPODs are required to receive sea lifted or sea based equipment or personnel. Secure staging areas allow the units to mount equipment, task organize, and conduct maintenance before moving on to their objective areas and executing their mission. Through transformation, the goal of each service is to reduce this reliance on infrastructure in its own ways.

<sup>11</sup> LMI, 4-12.

## PROJECTED REQUIREMENTS

Throughout the Cold War, the U.S. military projected its future requirements according to the projected capabilities of the threat, then the Warsaw Pact. Advances in threat technology, tactics, and objectives were closely monitored in order to develop counter measures that matched or exceeded those capabilities. Arms races turned into marathons for all sorts of weapon systems, from attack submarines to strategic nuclear missiles and tanks to fighter jets. With the collapse of the Warsaw Pact and the Soviet Union leaving the U.S. as the sole global superpower, neither the immediate nor the future threat was readily identifiable for the U.S. to measure itself against or match. Following Desert Storm in 1991, the U.S. focused its strategy on fighting two nearly simultaneous wars in Southwest Asia (SWA) against Iraq and in Northwest Asia (NWA) against North Korea. The current prepositioning structure described in the previous chapter was designed to rapidly reinforce one or both of these theaters.

The U.S. military also found itself deployed and engaged in military operations other than war (MOOTW), including peace keeping and humanitarian assistance missions, in unexpected locations such as Somalia, Haiti, Bosnia, and Kosovo. Regardless of any specific threat, the services had to adapt in order to provide the capabilities needed for success in the new environment while maintaining a war fighting capability to deter potential adversaries and, if necessary, fight and win a war. This capabilities-based approach centers on identifying how any future adversary will fight, instead of attempting to identify a specific adversary.<sup>12</sup>

While “the Armed Forces remain optimized for high-intensity conflict and combat operations in mature theaters,” they are all undergoing Transformation to develop and maintain comprehensive capabilities for any mission along the spectrum of conflict in any theater.<sup>13</sup> National, joint, and service policies define these required capabilities for the near term and the future to 2020 and beyond.

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<sup>12</sup> Meyers, National Military Strategy, 13.

<sup>13</sup> Ibid, 20.



## National Military Strategy

The 2004 National Military Strategy (NMS) provides strategic direction to the U.S. military in support of the President's National Security Strategy and the Secretary of Defense's National Defense Strategy. Written by the Chairman of the Joint Chiefs of Staff, the NMS specifically defines the security environment, sets objectives, identifies required capabilities and attributes, and provides guidance for force structure and development.

The security environment envisioned by the NMS consists of a wide range of adversaries, from the conventional military forces of state actors to the irregular non-state or transnational actors. These adversaries may have access to advanced technology and weapons of mass destruction (WMD). Furthermore, they will be operating in an increasingly complex and distributed battle space, challenging our global reach capabilities and regional access. These competitors will seek to avoid U.S. strengths by developing asymmetric capabilities for disrupting its alliances and denying access to regional infrastructure and facilities. This assessment is not dissimilar to today's security environment with threats ranging from belligerent North Korea conventional forces to Iraqi insurgents to the terrorist Al Qaida network.

The NMS establishes three military objectives: protect the U.S. homeland against external attacks and aggression, prevent conflict and surprise attacks, and prevail against any adversary.<sup>14</sup> The military must protect the homeland to prevent another attack similar to the one on September 11, 2001. To prevent conflict, the U.S. must defend our interests abroad, deter aggression by potential adversaries, and reassure our allies through forward posture and presence within their regions. When called upon to prevail against an adversary, the Joint commander can either swiftly defeat (SDO) an adversary through limited operational objectives or win decisively (WD) to destroy an adversary's capabilities or regime. Both actions may require some level of stability and support operations (MOOTW) during post-conflict.

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<sup>14</sup> Ibid, 8.

In order to accomplish these objectives, the U.S. Armed Forces must be expeditionary, adaptable, fully integrated or joint, and networked.<sup>15</sup> Expeditionary forces are rapidly deployable, quickly and decisively employable, and thoroughly sustainable throughout the global battle space.<sup>16</sup> Their adaptability is a function of their modular capability to selectively task organize according to the situation and mission requirements.

The critical component of each of these objectives and capabilities is power projection of integrated land, air, sea, special operations, information, and space capabilities maneuvered to a position of advantage and engaged to produce a desired effect.<sup>17</sup> Within power projection are the implied tasks of mobilizing, transporting, integrating (RSOI), employing, and sustaining forces over a distance of thousands of miles into an austere environment against an adversary that is denying access to the region. Joint forces must operate from the common areas of space, international waters, international airspace, and cyberspace in order to mitigate infrastructure access vulnerability.<sup>18</sup> Significant planning and resources are required to establish and maintain the lines of communication (LOC) supporting such an expedition. Additional requirements include a forcible entry capability and non-linear security measures against unconventional forces, ballistic missiles, and WMD.

## **Joint Transformation Planning Guidance**

As mentioned in the previous section, the President and the Secretary of Defense have directed the Department of Defense to transform to a capabilities-based force that maximizes network-centric, information age technology. Although Transformation is expected to be an ongoing, continuous process, its objectives are to produce forces with specific qualities. The first is a “standing joint force headquarters conducting effects-based, adaptive planning to defeat

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<sup>15</sup> Ibid, 14.

<sup>16</sup> Ibid.

<sup>17</sup> Ibid, 15.

<sup>18</sup> Ibid, 20.

enemy threats” using joint, networked, modular forces.<sup>19</sup> The Joint Force must also defeat any anti-access or area denial through a combination of contamination avoidance, mobile basing, and effects-based targeting.<sup>20</sup> Third, transformed forces must provide a joint common operational picture (COP) through networked, joint and interagency command, control, computers, communications, intelligence, surveillance, and reconnaissance (C4ISR) to maintain information and decision superiority. Fourth, tailored, scalable, combined arms forces must be capable of decisive maneuver to mass effects on the adversary. This maneuver capability includes both the Army’s operational maneuver from strategic distance (OMFSD) and the Marines’ ship to objective maneuver (STOM).

## **Joint Vision 2020**

Joint Vision 2020 (JV2020) is the equivalent of a corporate strengths, weaknesses, opportunities, and threats (SWOT) analysis for the U.S. Armed Forces. Written by the Chairman of the Joint Chiefs of Staff, it builds upon the Transformation Guidance described above while focusing on the long range strategic environment for the year 2020.

JV2020 primarily continues the evolution of the Joint Force. Rather than each service merely supporting, reinforcing, or cooperating with each other under a Joint Task Force Commander, the services continue to develop interdependent, interoperable, and integrated relationships. Beyond joint forces, the evolution also includes interagency and coalition in the integrated relationship. Likewise, JV2020 emphasizes the joint command and control structures and concepts to best manage the integrated joint / coalition / interagency relationships. Most notable is the creation of the standing Joint Task Force (SJTF) initially for planning and then to provide the core staff when modular units are attached to the SJTF for an operation.

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<sup>19</sup> Donald H. Rumsfeld, *Transformation Planning Guidance*, Washington D.C.: Government Printing Office, April, 2003, 10.

<sup>20</sup> Ibid.

As described in the Transformation Guidance, Joint Forces must be capable of full spectrum operations (SDO, WD, and MOOTW), information and decision superiority, and integrating innovative future operational concepts. Joint Forces must be proficient in dominant maneuver, precision engagement, information operations, focused logistics, and full dimensional force protection.

Joint Forces Command (USJFCOM) tests and evaluates seabasing concepts and requirements during the Sea Viking series of exercises, cosponsored by USJFCOM and the Marine Corps. Sea Viking 04 focused on projecting joint combat power ashore from a joint sea base, including joint forcible entry, joint sustainment, and networked information sharing.<sup>21</sup> Each service contributes to the Sea Base separately in an interoperable manner. The Unified Quest 04 exercise, cosponsored by USJFCOM and the Army, explored emerging joint operations concepts and capabilities, specifically addressing joint interoperability issues. UQ04 findings on sea basing revealed a lack of understanding of the sea base as a holistic operational concept that includes both operational maneuver and logistic functions.<sup>22</sup>

Each service is developing its own operational concept and technology in support of JV2020 and within their U.S. Code, Title X requirements. Figure 2 displays the concepts each service component is developing in order to defeat the anti-access threat by the year 2020. Only the Navy's Sea Basing concept is currently within reach of transitioning from a concept to a capability. All of the other services require significant improvements and increase in inter-theater and intra-theater lift platforms to make their programs a reality.

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<sup>21</sup> Jennifer Colaizzi, "Joint experiment examines future seabasing command and control capabilities".

<sup>22</sup> Unified Quest 2004 War Game: A Marine Perspective, available from <http://www.wargaming-quantico.usmc.mil/titleX/USA/documents/UQ%2004%20aar.pdf>; Internet; accessed on 16 Nov 04.



Figure 2: Service Concepts in Support of Joint Vision 2020<sup>23</sup>

The Navy's Sea Power 21 consists of the triad of Sea Strike, Sea Shield, and Sea Base, as described in the previous chapter. The central requirement of Sea Power 21 is the projection of joint interdependent combat power from the oceans. The Sea Base will become the integrated network of platforms at sea that provide command and control; information and intelligence systems; sea, land, and air power projection; secure sustainment base and lines of communication; and undeniable access to any international waters.

The Marines' STOM has the requirement to avoid a build-up ashore completely by conducting RSOI at sea and maneuvering directly to the inland objective without a beachhead, APOD, or SPOD. The Commandant of the Marine Corps has laid out a requirement for the capability to conduct RSOI at sea in order to rapidly strike deep inland from the sea. In essence he wants to be able to conduct an operation like OIF without the need to stage and build-up ashore as I MEF had to do in Kuwait.<sup>24</sup> Figure 3 depicts the difference between the current capabilities of the MPF and the desired capabilities of the MPF(Future). The MPF(F) can stage at

<sup>23</sup> LMI, 2-8.

<sup>24</sup> William Matthews, "Sea basing would speed U.S. Marines to trouble spots: Commandant"

sea from an APOD in theater and then strike directly to the objective, unlike the current MPF, which needs an SPOD and APOD within striking range of the objective. Integral to the STOM

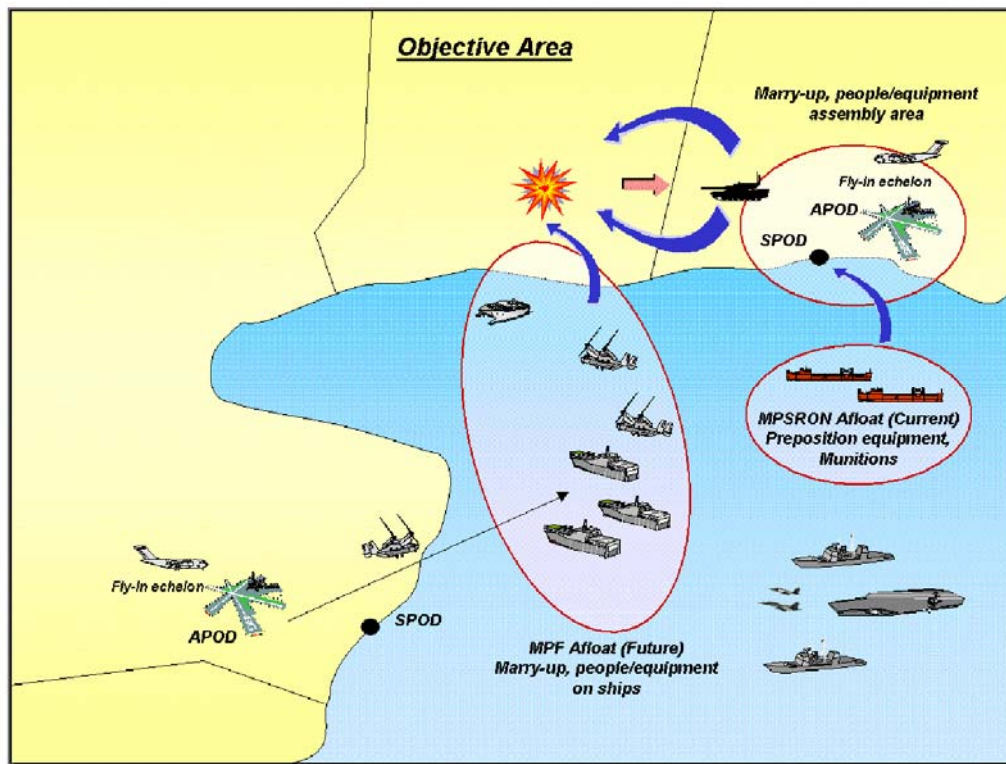


Figure 3: Comparison of MPF(Current) and MPF(Future)<sup>25</sup>

concept, the Marines have a requirement for a new medium and heavy, long range, vertical take off and landing aircraft to transport forces from ships over the horizon to an objective up to 200 miles inland.

The MV-22 Osprey is undergoing limited fielding to fulfill this role; however, it will not be fully operational until beyond 2010 (see ongoing research section in chapter 5). The direction of the ongoing vessel development and acquisition will determine if the MPF(F) will remain a set of floating warehouses or if it will be a truly autonomous sea base for the Marines (see Figure 4). The ability of the sea base to receive strategic airlift sorties allows the sea base to be completely autonomous from land bases.

<sup>25</sup> LMI, 4-15.

## MPF2010 Capability Options

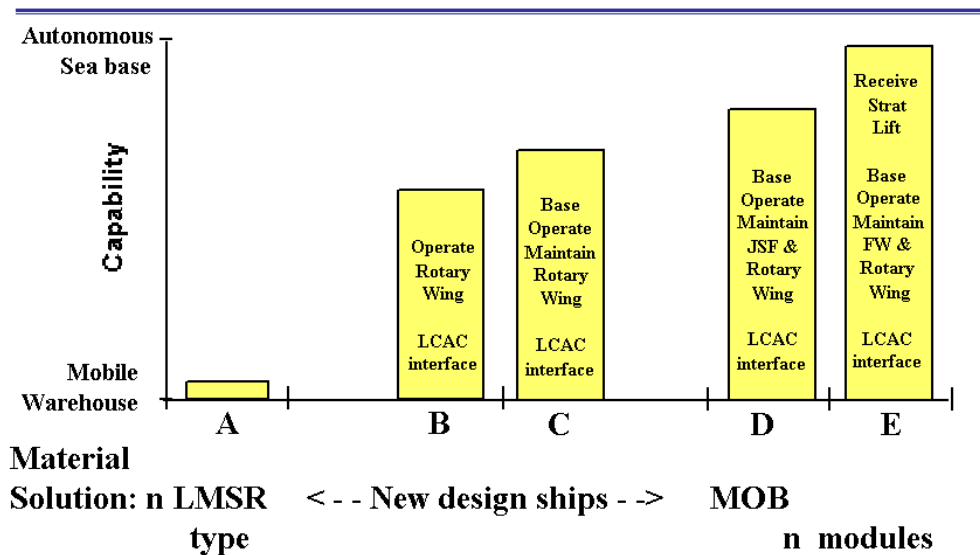


Figure 4: MPF(F) Capability Options

Similar to the Marine Corps, the Army expects OMFSD to enable it to deploy directly from the power projection platform in CONUS to the theater of operations within striking range of the objective, also bypassing the need for an APOD or SPOD. The combination of the Stryker Brigades and the yet to be developed Future Combat System with sufficient inter-theater and intra-theater airlift will provide the Joint Forces Commander a modular, deployable strike package to project land combat power anywhere in the world.

This also allows the Army to consolidate its forces in CONUS, while rotating units into operational theaters in support of the RCC (see Figure 5). As part of this strategy the Chief of Staff of the Army decided to reorganize the single Army prepositioned afloat (APS-3) into three modular packages of four ships each into Army Regional Flotillas (ARF) for the Pacific Ocean, Indian Ocean, and Mediterranean theaters.<sup>26</sup> While ARFs will increase the regional coverage, the

<sup>26</sup> Emily Hsu, "Army revamps Global Positioning Strategy Based on Recent Wars" *Inside the Army*, 23 February 2004, Volume 16, number 8.

onboard equipment organization has reduced combat power (one each infantry and armor battalions), but increased stability and support capabilities.<sup>27</sup>

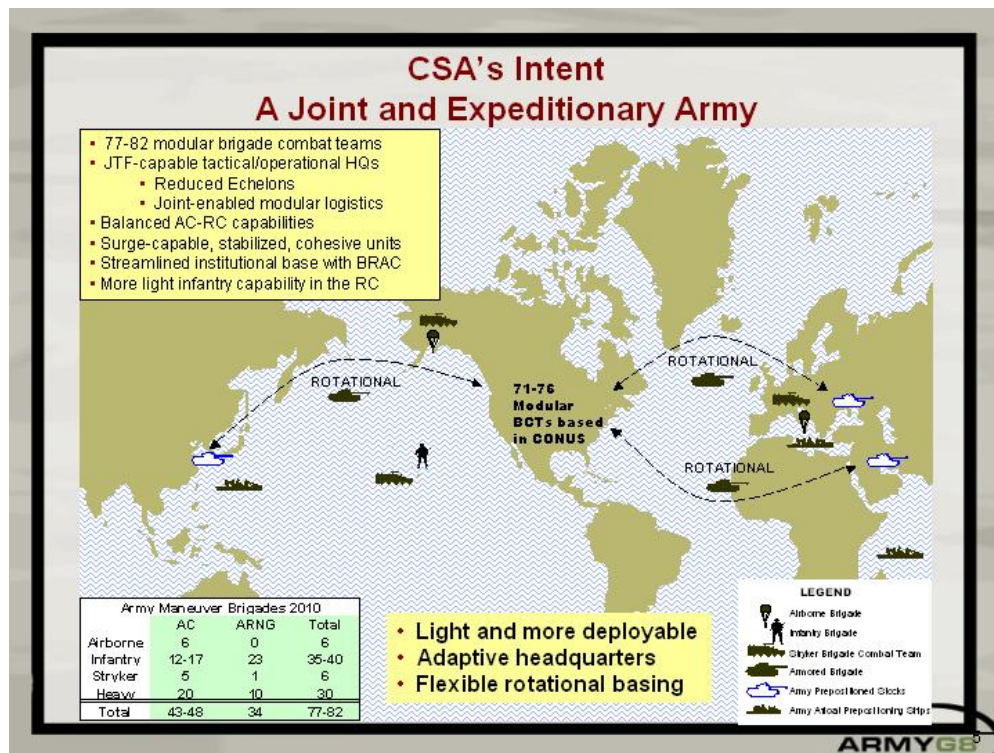


Figure 5: Army Chief of Staff Intent<sup>28</sup>

Finally, the Army is considering a system to house, project, and sustain special operations forces (SOF) and airmobile forces. Designated as Afloat Forward Staging Bases (AFSB), the system would consist of four commercial container ships modified with a flight deck, hangar deck, storage space for all personnel (over 4000 soldiers) and equipment (93 helicopters) in an entire Air Assault Unit of Action (UA).<sup>29</sup> The AFSB would increase the vertical maneuver capability within the JTF by complementing and reinforcing the MAGTF. This requirement has

<sup>27</sup> Ibid.

<sup>28</sup> Hahn, Reset of the Force, Briefing to the Chief of Staff of the Army, 09 September 2004; available from [proceedings.ndia.org/4620/BG\\_Hahn.ppt](http://proceedings.ndia.org/4620/BG_Hahn.ppt); Internet; accessed on 14 Dec 04.

<sup>29</sup> Gregory Kraak, "Executive Summary: Sea Viking Capabilities Seminar", 20 May 2004.



arisen from the Army's previous use of aircraft carriers without their air wings in Iran (1980), Haiti (1994), and OEF (2001).<sup>30</sup>

The AFSB would provide the Army with the same STOM capabilities desired by the Marines, but it will be limited by the range of the current Army helicopter fleet. The Army will require a new heavy and medium, long range, vertical take off and landing aircraft to transport forces from intermediate staging bases or ships to an objective up to 1000 miles away (see ongoing research section in chapter 5).

Both the STOM and OMFSD concepts support forward presence of the RCC while also providing options for the JTF commander to use unpredictable force deployments to achieve operational surprise. They also reduce the reliance on forward deployed forces, forward land bases, and political and military access to local infrastructure.

## **Shortfalls**

By comparing the previous discussions on current Joint Force capabilities and Joint requirements to project land power in the 2020 timeframe, the shortfalls in the capabilities to meet the defense strategy become apparent. Relevant to sea basing, the primary shortfalls are a continued reliance on existing land based infrastructure, an inability to guarantee military and political access, and insufficient air and sea lift to meet operational concepts and timelines.

The continued reliance on existing infrastructure, including land based intermediate staging bases (ISB), APOD, SPOD, air bases, depots, and pre-positioned sites, will drive the tempo of operations and limitations of operational maneuver. As the RCC builds his operation campaign, logistical concerns are paramount. Ground, air, and sea lines of communication (LOCs) from the power projection installation through the ISB to the theater must be established and maintained to sustain the joint force. Likewise, distribution systems must be emplaced at the user end of the LOCs to meet the demands of each of the component forces. This infrastructure is

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<sup>30</sup> Stephen Caramel, "A Commercial Approach to Sea Basing – Afloat Forward Staging Bases", Proceedings of the United States Naval Institute, January 2004, Volume 130, Issue 1, p. 78.

critical early in the campaign to support the deployment, RSOI, and sustainment of the joint force. Therefore, the infrastructure requirements are predictable and dictate from where the RCC can project power, reducing his operational flexibility. Furthermore, adversaries can monitor activity at these fixed installations to discern the RCCs capabilities and intent.

This reliance on existing infrastructure also carries additional vulnerabilities in terms of access denial and force protection. An adversary may conduct extensive diplomatic negotiations or information operations to persuade a needed ally to limit or deny access to US forces. As mentioned previously, Turkey's refusal to permit US forces access to the Northern border of Iraq severely restricted US options for OIF scheme of maneuver. In terms of force protection, known, fixed facilities are easily targeted by enemy ballistic missiles and asymmetric threats. During OIF, Iraq targeted the RSOI facilities in Kuwait with SCUD missiles and targeted civilian contractors working at those facilities with personal attacks.

The inability to guarantee military and political access within a changing global security environment can severely hamper US operations. As the era of colonial empires is replaced by the new world order, alliances have become much more transient. Yet, the tyranny of time and distance still require ISBs and forward staging bases in order to project sustainable land combat power. Without permission for military and political access, the military must conduct a forcible entry within the adversary's battlespace to fight for access. The sea base directly addresses this shortfall for the littoral regions by providing that forward staging base.

Current operational concepts require significant air and sea lift capacity to meet ambitious timelines in support of operational maneuver. To meet the Army's OMFSD, specifically deploying a Stryker Brigade in 96 hours, requires over 1/3 of the Air Force's C-17 and C-5 fleet and 5-6 days, assuming an adequate APOD is available.<sup>31</sup> The GAO report on Transformation further specifies that the complete deployment of a Stryker brigade would require

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<sup>31</sup> US GAO Report "MILITARY TRANSFORMATION: Realistic Deployment Timelines Needed for Army Stryker Brigades" June 2003, available online at <http://www.gao.gov/new.items/d03801.pdf>

a mix of air and sea lift, which was validated when the first Stryker brigade deployed to OIF. The Marines STOM requires a significant increase in intratheater lift, including ship-to-shore transport capability. The Marines are addressing this shortfall through the development of new air and surface craft (see the V-22 in the ongoing research section).

Each of these shortfalls must be overcome to meet the capabilities and intent outline in Joint Vision 2020. The solution must increase the RCC's flexibility, improve strategic and operational responsiveness, develop joint interdependence, and reduce joint force vulnerabilities.

## **EMERGING CONCEPTS**

Given the Joint Force requirements, how can the U.S. military use sea based forces and equipment to develop capabilities to overcome the projected shortfalls by 2020? Two primary concepts are competing within joint circles to answer that very question. The first is a continuation of the current strategies adapted separately by each service, the system of systems approach, or the regional flotilla. The second is a radical leap forward from the discrete service approach, the joint mobile offshore base (JMOB). Both courses of action (COA) meet the projected requirements discussed in chapter 3, and both are dependent upon emerging technology to overcome the projected shortfalls. However, each COA must be analyzed and then compared according to the following evaluation criteria: responsiveness, flexibility, joint interdependence, and vulnerability to determine the optimal solution.

Responsiveness refers to the time required to deploy and employ a unit of combat power. Sea based prepositioned forces and equipment improves the closure time of deploying units into the theater by reducing the fly-in-echelon equipment required to be brought from CONUS. This also increases the potential of diverting a crisis early. Improved responsiveness also contributes to maximizing operational surprise by reducing both the time and the infrastructure required to complete RSOI before maneuvering to the objective.

Flexibility is a measure of the number of options available to the joint force commander. Beyond the ability to simply use or not use a resource, the COA should maximize the employment options in order to provide a wider range of capabilities and best match the demands of situation along the spectrum of conflict. This includes selective offload in order to meet the needs of SDO or humanitarian assistance, as in the recent tsunami relief efforts in Indonesia. Furthermore, flexibility includes the ability to rapidly reconstitute and respond elsewhere in theater.

Joint Interdependence is the synergy of land, air, and sea combat power that gives the Joint Force capabilities and power well beyond the sum of its parts.<sup>32</sup> Interdependence maximizes contributions of each service as required by Title X, U.S. Code, as part of a joint team while minimizing unnecessary redundancies that duplicate capabilities and functions. The services compete seek to maximize their core competencies and relevance within the national security structure in the competition for a larger slice of the Defense Department budget. However, the core competencies and capabilities of the Joint Force must take priority over service parochialism.

Vulnerability includes both the physical security of the troops and equipment and the operational security of the potential for defeat from anti-access strategies and actions. While the risk to force and the risk to mission are often inversely proportional in the conduct of operations, sea based forces and equipment can mitigate both risks. The COA should remain a viable option regardless of the environment, ranging from political limitations of neutrals to threat denials with force or WMD within key infrastructure.

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<sup>32</sup> Peter Schoomaker, "Our Army at War: Relevant and Ready".

## Joint Regional Flotillas



**Figure 6: The LMSR USS Bob Hope<sup>33</sup>**

The Joint Regional Flotilla (JRF) concept is a system of systems combination of individual service programs expected to coordinate and operate within each region. This coordination has been primarily the domain of the Naval services with the amphibious task force, the amphibious ready group (MPF), and the carrier battle groups within each region. This concept will be both expanded, to include the ARF, and improved, with the development of ENS and MPF(F). Should the Afloat Forward Staging Bases (AFSB) become a reality, it too would integrate into this fleet.

Each service component serves a separate, although similar role within the JRF. The Navy's ENS coordinates the sea strike, sea shield, and sea base components. Joint command ships (JCC) provide the JFC with an integrated, networked, command, control, and communications platform within the sea base. The carrier battle group provides the sea strike and sea shield components to protect the sea base and the sea LOCs.

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<sup>33</sup> GlobalSecurity.org <http://globalsecurity.org/military/systems/ship/images/takr-300-bobhope2.jpg>

The amphibious task force can project land combat power by disembarking a MEU within the littoral region as an operational quick response force. The MEU has forcible entry, limited special operations, and MOOTW capabilities using light, airmobile, amphibious, and mechanized combat power augmented by a significant air combat element (ACE) and combat services support element (CSSE). If necessary, the MEU can be expanded to become a more robust MAGTF by deploying a MEB with the MPF(F) equipment, staging at sea, and conducting STOM.

The AFSB provides the combat power of an Air Assault UA, augmented with an Aviation UA, to compliment and reinforce the MAGTF's airmobile capabilities. The AFSB consists of four modified container ships, each with a flight deck, a hanger deck for up to 30 various helicopters, helicopter elevators, fuel and munitions storage, and berthing spaces for over 1000 soldiers.<sup>34</sup> The Air Assault UA has three light infantry battalions, an artillery battalion, a forward support battalion and other combat support elements, including engineer, signal, air defense, chemical, and military police units. The Aviation UA has an attack battalion, a medium lift battalion, a heavy lift company, and an aviation maintenance company.

Finally, the ARF provides the equipment on LMSRs for a deployed Army heavy UA and a significant Theater Opening Force Module (TOFM). The TOFM provides the materiel handling equipment and systems to open and operate both APODs and SPODs in order to facilitate follow-on force and sustainment flow into theater.

Figure 8 depicts the concept of operations for the JRF including the ENS, the MPF(F), the ARF and the AFSB. The MPF(F) utilizes the theater intermediate staging base (ISB) to receive the fly-in-echelon of personnel before staging at sea and conducting STOM. The AFSB must load personnel, equipment, and aircraft either in CONUS or at the ISB before proceeding

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<sup>34</sup> Jacob Biever, Operational Concept: How an Air Assault Brigade Combat Team-Afloat Would Compliment and Reinforce a Marine Expeditionary Force, TRADOC Future Center.

towards the objective area. The ARF still requires both an APOD and an SPOD to conduct RSOI for both the fly-in-echelon of personnel and equipment as well as the embarked equipment.

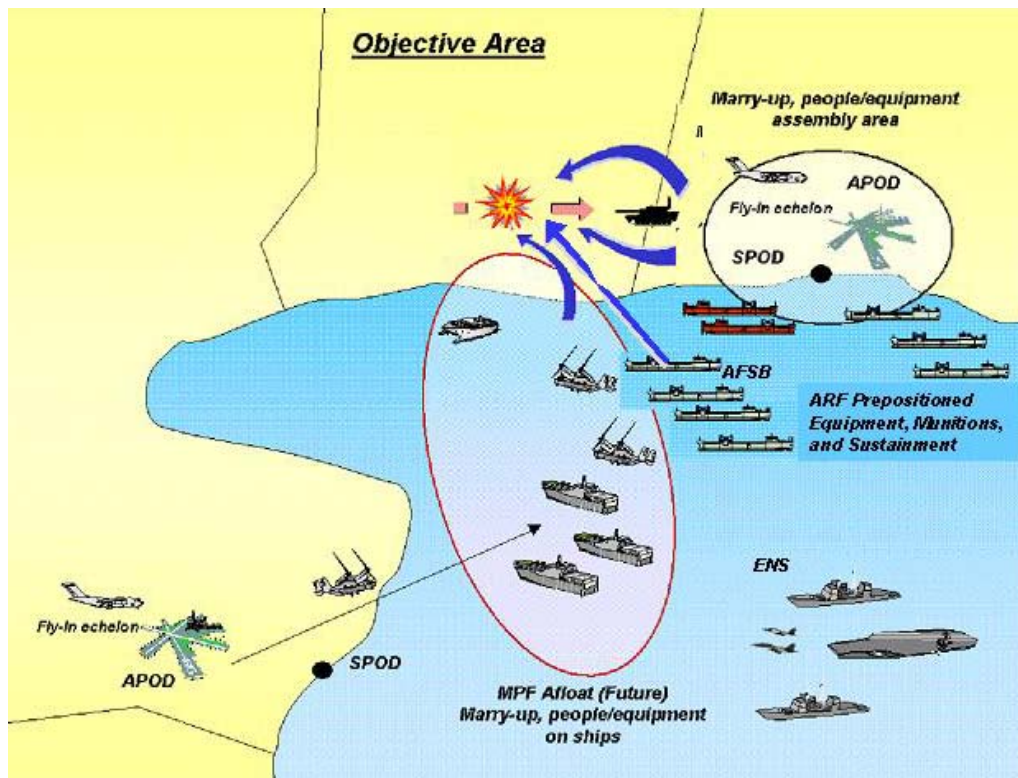


Figure 7: Joint Regional Flotilla Concept of Operations<sup>35</sup>

The JRFs responsiveness is limited by the available inter- and intra-theater lift available to deploy troops into theater to marry-up with the equipment in the flotilla. Additionally, the theater infrastructure also limits the JRFs responsiveness with the need for an ISB for the transfer of troops from inter theater lift (C-17) to vessels (TSV) or aircraft (MV-22) that can stage at sea. For those forces unable to stage at sea (ARF), an APOD and SPOD are still required to conduct RSOI.

The JRF provides the JFC significant flexibility with multiple employment options to respond to any crisis along the spectrum of conflict. The JRF may offload scaleable force packages to meet the specific mission requirements. As a system of systems, adding additional

<sup>35</sup> LMI, 4-15. The author modified this diagram to include all aspects of the JRF.

and various ships to the flotilla may scale the size and capability of the JRF itself. If necessary, the National Command Authority can mass multiple JRFs in a single theater to support a major contingency. However, the need to seize and secure an APOD or SPOD may restrict the employment timeline or options.

While the JRF is interoperable with each service coordinating and contributing to the joint force, it is not truly interdependent. The JRF system of systems is composed of separate Navy Sea Base, MPF(F), and ARF ships, each providing support for its own component and cooperating with the other members of the joint force. The deconfliction of these redundancies within the JRF may detract from the synergistic effects desired by the JFC.

The JRF reduces many of the current vulnerabilities faced by forces undergoing RSOI ashore by staging many forces at sea and then maneuvering directly to the objective (STOM). The use of the sea enables sovereign vessels to operate without diplomatic restrictions. Indeed, the presence of such a force within reach of an adversary can often enhance diplomatic dialogues. However, the remainder of the JRF requiring APODs and SPODs for RSOI remains vulnerable to conventional, asymmetric, and WMD attacks against those fixed facilities.

In summary, the JRF is an evolutionary improvement beyond our current sea based forces and equipment. However, it does not completely eliminate all of the identified shortfalls. The JRF still requires land-based infrastructure (APOD, SPOD, and ISB) to complete the staging of forces and prepositioned equipment. Unless conducting forcible entry operations, the JRF must be granted access to complete the equipment discharge. Finally, the JRF does not provide direct access to inter-theater lift platforms; deploying personnel must be transloaded to intra-theater lift at an ISB to conduct staging at sea.



## Joint Mobile Offshore Base



**Figure 8: Joint Mobile Offshore Base (JMOB)**<sup>36</sup>

The concept of using a Joint Mobile Offshore Base (JMOB) to overcome access denial is not new. For the D-Day invasion of Normandy, the Allies constructed two huge modular platforms to provide artificial docks on Gold and Omaha beaches in order to rapidly project land combat power and supplies ashore. These platforms, known as Mulberry's, were critical to avoid reliance on existing infrastructure and port facilities, which were either heavily defended by the Germans or had been damaged by Allied air strikes. The platforms were towed into place behind the assaulting waves, assembled, and operational within twelve days of the invasion.

Each Mulberry harbor consisted of six miles of steel and concrete causeways and several lines of protective artificial breakers (sunken ships and caissons), and was capable of delivering 7,000 tons of vehicles and supplies per day from ship to shore.<sup>37</sup> Although a storm destroyed the one on Omaha beach less than one week later, the Mulberry harbor at Gold beach remained in operation for ten months providing SPOD facilities for a total of “two and a half million men, a half million vehicles, and four million tons of supplies.”<sup>38</sup> This capability supported the Allies’

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<sup>36</sup> GlobalSecurity.org <http://www.globalsecurity.org/military/systems/ship/mob-gallery.htm>

<sup>37</sup> Adrian Lewis, “Mulberry” online at <http://search.eb.com/normandy/articles/Mulberry.html>.

<sup>38</sup> Ibid.

need for operational surprise and sustained the forces ashore until the port at Cherbourg was captured and the Allies broke out of the beachheads and hedgerow country.

The need for a JMOB has been demonstrated more recently in 1994 when the 82d Airborne Division occupied the aircraft USS Eisenhower to serve as a sea base for air assault operations into Haiti for Operation Restore Democracy.<sup>39</sup> In support of OEF, the Navy again removed the flight wing from an aircraft carrier, the US Kitty Hawk, to serve as a sea base for special operations forces launching into Afghanistan.<sup>40</sup> With the recurring need for a mobile sea base from which to project land combat power in joint operations, a less ad hoc solution is required to provide this capability.

The JMOB concept is a modular, self-propelled, semi-submersible floating platform. Conceptually, each module is 1000 feet by 500 feet with 3 million square feet of storage space, nearly ten times the amount on an LMSR, with berthing spaces for 3000 troops and an Army heavy UA's worth of equipment.<sup>41</sup> Assembled, the JMOB would also provide a stable 5000 foot runway for conventional flight operations, including C-17s, and ship to ship transfers. The JMOB is a floating island with a port and airfield, an intermediate staging base, a logistics hub, and an assault platform for STOM all in one package. While the aircraft carrier was the logical evolution to project air power across the seas, the JMOB is the logical evolution to project joint combat power around the globe.

The JMOB would not eliminate the need for other components of the sea base operating within each region. The Naval services would retain the lead in manning, operating, securing, and sustaining the JMOB. While the carrier battle group and the amphibious task force within each region would maintain their current missions of sea strike and sea shield, the JMOB would augment the MPF(F), the ARF, the AFSB, and the JCC. In fact, the JMOB would serve as both

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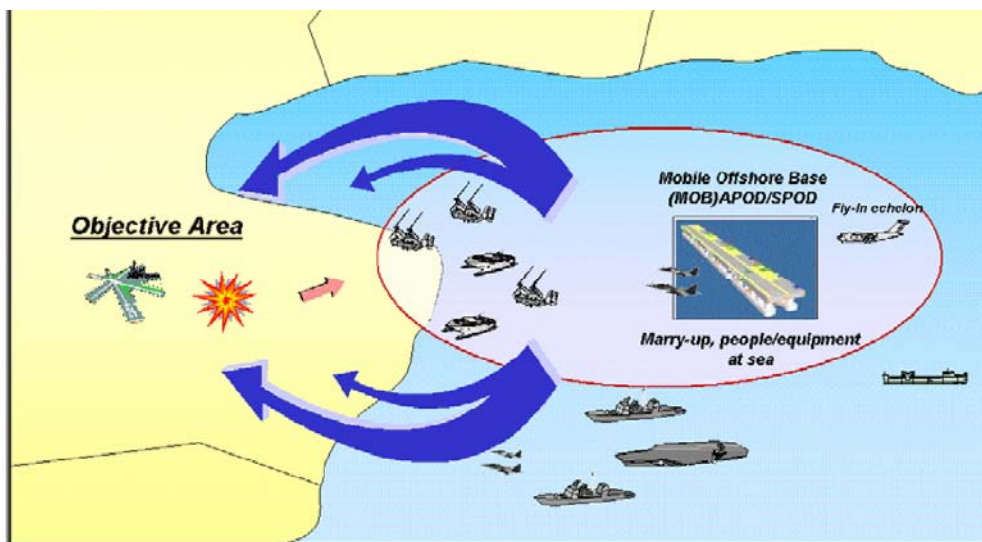
<sup>39</sup> Stephen Caramel, "A Commercial Approach to Sea Basing – Afloat Forward Staging Bases", Proceedings of the United States Naval Institute, January 2004, Volume 130, Issue 1, p. 78.

<sup>40</sup> Ibid.

<sup>41</sup> GlobalSecurity.org <http://globalsecurity.org/military/systems/ship/mob.htm>.

the APOD and the SPOD for the other system by receiving the fly-in echelon of personnel and the sea lifted equipment. The forces would then maneuver directly to the objective through air or surface lift.

Beyond serving as a Mulberry style link for ship to shore movement, the JMOB would become the theater intermediate staging base. The JMOB would provide the logistical hub for theater distribution to all service components for all classes of supplies by transferring material and munitions from strategic lift, both sea and air, to intra-theater lift, again both sea and air. The platform itself would host needed theater maintenance and medical services. Just as the aircraft carrier projected air combat power across vast distances at sea, the JMOB will project land combat power and sustainment into the region.



**Figure 9: JMOB Concept of Operations<sup>42</sup>**

The responsiveness of the JMOB is equally limited by the available inter- and intra-theater lift available to deploy troops into theater to marry-up with the equipment stored on the platform or other sealift vessels. However, the requirement for additional theater infrastructure is eliminated by the capability of the JMOB to act as an ISB, APOD, and SPOD for the transfer and RSOI of troops from inter theater lift (C-17) to vessels (TSV) or aircraft (MV-22) that can take

<sup>42</sup> LMI, 4-16.

them directly to their objective. Additionally, the JMOB serves as a facility for rapidly reconstituting the force in preparation for commitment elsewhere in the theater.

The JMOB provides the JFC significant flexibility with multiple employment options to respond to any crisis along the spectrum of conflict. Also, the equipment and supplies aboard the JMOB can be selectively deployed without the need to completely unload the vessel. Likewise, the JMOB can selectively offload other sealift, storage, and container vessels and transfer their cargo to waiting air or sealift vessels going ashore. This provides the JFC with the maximum number of options to conduct the campaign.

The JMOB is truly interdependent as the central hub of the joint force, including Army, Navy, Marine, Coast Guard, SOF, and Air forces. Its command and control, power projection, storage, maintenance, and medical facilities provide the synergistic effects of the Joint Force desired by the JFC.

The JMOB reduces the critical vulnerability of reliance on overseas land bases by forces undergoing RSOI at sea and then maneuvering directly to the objective (STOM). The use of the sea enables sovereign vessels to operate without diplomatic restrictions. Indeed, the presence of such a force within reach of an adversary can often enhance diplomatic dialogues. The JMOB would be protected from land based or asymmetric attack. Although the JMOB would remain vulnerable to air, naval, and WMD attacks, the mobility of the platform would mitigate much of the risk.

In summary, the JMOB is a revolutionary improvement beyond our current sea based forces and equipment; eliminating most of the identified shortfalls. Given adequate ship to shore (or objective) lift capabilities, the JMOB eliminates the requirement for land-based infrastructure (APOD, SPOD, and ISB) by providing direct access to inter-theater lift assets, both air and sea. With sufficient capacity for staging at sea in international waters, the JMOB does not require either political or military access in preparing for a mission. Finally, the JMOB mitigates the

requirement for excess lift assets by serving in the role of APOD, SPOD, and theater distribution center; thereby, eliminating the need for an ISB.

## **Comparison**

Both the JRF and the JMOB improve the RCC's responsiveness to an emerging crisis by forward staging of both forces and equipment in theater to reduce the flown-in-echelon requirements. Both have the disadvantage of remaining dependent upon adequate intertheater air and sea lift to deploy forces and equipment not forward staged in theater. The JRF has a limited ability to stage forces at sea and conduct STOM; however, the JRF still requires both an APOD and an SPOD for complete deployment. Conversely, the JMOB has the ability to completely stage forces at sea on a mobile platform. The JMOB can serve as both an APOD and an SPOD, receiving intertheater air and sea lift and transferring forces and equipment to intratheater transport for STOM.

Both the JRF and the JMOB increase the RCC's flexibility by providing mobile platforms and infrastructure from which to conduct operations. This capability enables the RCC to maintain operational and / or tactical surprise by operating from over the horizon instead of from known, fixed infrastructure that can be observed by an adversary. The JRF has the disadvantage in requiring both an APOD and an SPOD to conduct operations with the complete force package. Also, the current vessels that would comprise the JRF can not be selectively downloaded for a tailored force package. The current configurations and load plans of the LMSRs require the vessel to be completely downloaded by stevedores into an SPOD staging area in order to access all of the equipment and supplies aboard. The JMOB serves as both an APOD and an SPOD with the ability to selectively offload the equipment and supplies stored aboard the platform. Furthermore, the JMOB serves as a staging area for the current sealift vessels, allowing them to offload on to the JMOB rather than a fixed port facility. The JMOB does have a size disadvantage in that the dimensions of its modules (1000 x 500 ft) prevent it from navigating

either the Panama or Suez canals. The JMOB modules would have to self deploy around the continents, although multiple JMOB sets stationed in the Atlantic, Indian and Pacific oceans would minimize the need to deploy a JMOB to another theater.

The JRF improves joint interoperability through the integration of multiple service components comprising the flotilla. However, the JMOB develops true joint interdependence by serving as the platform for the standing joint task force as well as the theater distribution hub for joint deployment and sustainment.

Both the JRF and the JMOB reduce the vulnerability of the joint force by providing a mobile sea base, operating in the commons, and protected by the Navy's Sea Shield and Sea Strike concepts. While the JRF still requires some access to fixed facilities vulnerable to conventional and unconventional threats, the JMOB eliminates the need for vulnerable land based infrastructure and minimizes the logistical footprint ashore. Again, the size of the assembled JMOB platform (5000 x 500 ft) could present a vulnerable target for anti-ship missiles and submarines.

In summary, while each COA has its advantages and disadvantages, they are not mutually exclusive. The JMOB unifies many of the redundant capabilities found in the JRF, while adding the significant capability to serve as a mobile APOD/SPOD. Should the US military eventually adopt either both COA or a combination of the two, the JRF and JMOB will be mutually supportable in meeting the requirements of the Joint environment in 2020. To enhance both the JRF and the JMOB, additional systems and advanced technology are required.

## **ONGOING RESEARCH**

While there is sufficient current technology available to support either COA, there is ongoing research to develop the systems to enable the either the JRF or the JMOB to be the centerpiece of the Joint Task Force executing the operational concepts in 2020. Beyond the

technology for the platforms themselves, there remain requirements for significant improvements in air and surface lift capabilities. Inter-theater platforms, both air and sea, must provide sufficient capacity to deploy forces and equipment from CONUS through the ISB and to the sea base. Intra-theater airlift and surface vessels must provide sufficient capacity to maintain LOCs to the ISB and deploy forces from the sea base directly onto the objective.

## **JMOB Platforms**

If procured, the JMOB would become the largest floating structure ever built. Much of the technology is based upon current mobile offshore oil platforms; however, the ability to join these platforms into a single stable structure is completely new, and the most difficult to overcome. Three firms, McDermott, Kvaerner, and Bechtel, are actively pursuing the project. The Naval Surface Warfare Center and the Office of Naval Research have conducted extensive evaluations on the McDermott model and have concluded that industry could readily provide a complete JMOB platform.

Critics of the project focus on three aspects: cost, speed, and replacement of current platforms. The complete JMOB (five modules) is estimated to have a life cycle of over 50 years and to cost between \$8 to \$10 billion, compared to \$5 billion for a new aircraft carrier. However, compared to the \$26 billion the U.S. was willing to pay Turkey for maneuver rights into Northern Iraq during OIF, the U.S. could field a complete JMOB in each of the three regions patrolled by the carriers and the MEUs. The speed of each module is only 15 knots, allowing them to deploy anywhere in the world within thirty days. The assembled platform is capable of only 5 knots, but unlike a fast or medium speed sealift ship, the JMOB would remain in the region to serve as a sustainment and staging base. Finally, the JMOB will not replace any other system because it is a completely new concept. Carriers, surface and subsurface combatants, sealift and sustainment vessels are still required. The JMOB is replacing the politically and physically vulnerable land bases, not the means of transport or power projection.

## Vertical Lift Platforms

Vertical lift platforms are the weakest link in both the STOM and OMFSD concepts. Current rotorcraft are incapable of ranging the required distances and payloads demanded by these concepts. Therefore, the U.S. military is considering several of the candidates below to upgrade or replace current systems.

The improved CH-53-X Heavy lift helicopter will lift the same weight capacity (32,000 lbs) as the CH-53-E model, but it will quadruple the range to 200 nm.



**Figure 10: CH-53X Heavy Lift Helicopter<sup>43</sup>**

The Marines have been developing the V-22 Tilt rotor aircraft since the late 1960's. It is currently undergoing limited fielding and testing. Although the V-22 has a 52,000 lbs capacity and a 200nm range, several safety difficulties and crashes have delayed the program.

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<sup>43</sup> GlobalSecurity.org <http://globalsecurity.org/military/systems/aircraft/h-53-pics.htm>





**Figure 11: V-22 Tilt Rotar Aircraft<sup>44</sup>**

The Advanced Theater Transport (ATT) is another tilt wing design with an 80,000 lbs payload capacity, a short take off and landing (STOL) capability (750ft), and a range 3000 nm. While this is generally one half the capacity of C-17 and twice capacity of C-130, the STOL capability would make it ideally compatible with even a single module of the JMOB.



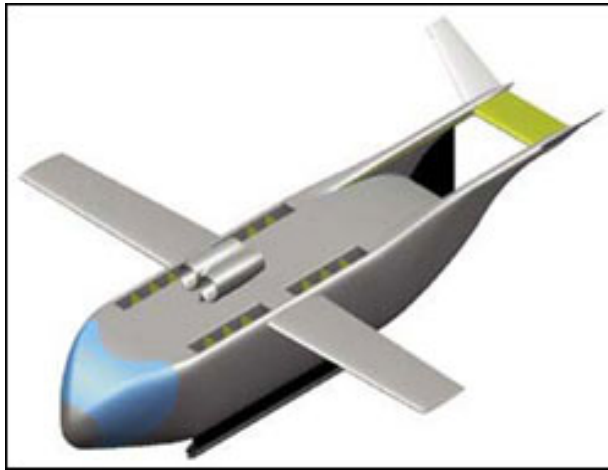
**Figure 12: Boeing version of the Advanced Theater Transport**

The most revolutionary vertical lift platform is Boeing's advanced pulse jet technology. This aircraft is lifted by multiple redundant pulse jet engines directed towards the ground and propelled forward by smaller turbines. The Germans developed the pulse jet in WWII to power the V-1 buzz bomb. The attractiveness of a pulsejet engine is simplicity as there are no moving parts, while it has all of the advantages of a tilt-rotor craft for vertical and horizontal flight. Also,

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<sup>44</sup> GlobalSecurity.org <http://globalsecurity.org/military/systems/aircraft/images/991157c.jpg>

the concept is scalable, so increasing the capacity of the aircraft is as simple as adding more engines. This model can be scaled from a small, unmanned version up to an 80,000 lbs heavy lifter with a range of over 3000nm. A 60,000 lbs lifter with a range of 1000nm would be ideal to carry FCS or Stryker vehicles from either the flotilla or JMOB to the objective. Although the engine is still being developed, and disadvantages include poor fuel economy and high noise, this could be the start of a new family of joint vertical lifting craft to replace helicopters.



**Figure 13: Boeing Advanced Pulse Jet VTOL Aircraft<sup>45</sup>**

## **Surface Lift Platforms**

While vertical lift platforms are exotic, the surface lift platforms are the backbone of the transportation system for moving equipment and supplies. Although there are a few new systems under development, most of the candidates considered below are upgrades for current systems.

The exception is the Shallow Draft High Speed Sealift Ship (SDHSS). Designed to augment the current fleet of LMSRs, it will transport 12,000 tons of heavy equipment and supplies, the equivalent of two armor battalions, between theaters.<sup>46</sup> Capable of speeds in excess of 40 knots in up to sea state 7 (25ft waves) with a range of over 11,500 nm, the SDHSS would reduce by one half the time needed to deploy critical combat forces from CONUS to the theater

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<sup>45</sup> Boeing website <http://www.boeing.com/news/frontiers/archive/2003/february/cover.html>

<sup>46</sup> FastShip Atlantic website <http://www.fastshipatlantic.com/enhancedsealift.html>



**Figure 14: Shallow Draft High Speed Sealift Ship<sup>47</sup>**

of operations.<sup>48</sup> Once in theater, it could transfer its cargo to the JMOB or discharge the cargo directly ashore in an under improved port (see figure 16).



**Figure 15: Shallow Draft High Speed Sealift Ship<sup>49</sup>**

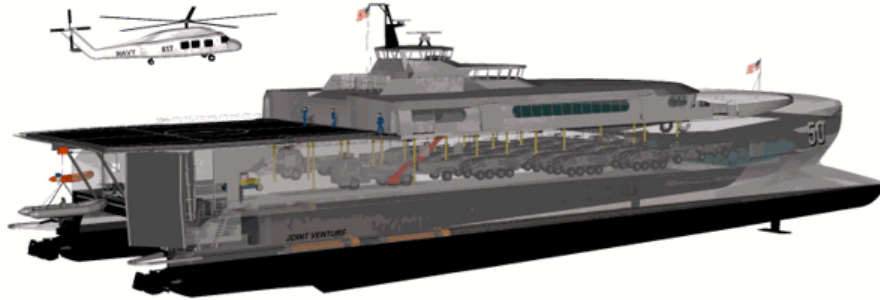
The recently acquired Theater Support Vessel (TSV) is essential for high-speed transfer of personnel, equipment and supplies either within a theater or between theaters. It can transport

<sup>47</sup> GlobalSecurity.org <http://globalsecurity.org/military/systems/ship/images/HSSship.jpg>

<sup>48</sup> Ibid.

<sup>49</sup> FastShip Atlantic website <http://www.fastshipatlantic.com/enhancedsealift.html>

1,250 tons at speeds in excess of 40 knots with a range of over 4,700 nm.<sup>50</sup> While transferring prepositioned equipment from Qatar to Kuwait during OIF, the TSV completed a round trip, including loading and unloading, in 24 hours, while the Logistics Support Vessel (LSV) required four days per trip.<sup>51</sup>



**Figure 16: Theater Support Vessel<sup>52</sup>**

The LSV is an integral part of Joint Logistics over the Shore (JLOTS), the transfer of equipment and supplies from strategic ships directly to the shore when access to fixed port facilities is unavailable or denied. With a range of 8,500nm at 12 knots, the LSV can transport up to 2,000 tons from a strategic sealift ship directly onto the beach using its bow ramp.<sup>53</sup> While the LSV may eventually be replaced by the TSV, it remains a valuable link between older sealift ships and the shore.



**Figure 17: Logistics Support Vessel<sup>54</sup>**

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<sup>50</sup> Theater Support Vessel <http://www.ausa.org/PDFdocs/tsv.pdf>

<sup>51</sup> The author personally supervised this operation as the Operations Officer for ARCENT-Kuwait.

<sup>52</sup> GlobalSecurity.org <http://globalsecurity.org/military/systems/ship/hsv.htm>

<sup>53</sup> GlobalSecurity.org <http://globalsecurity.org/military/systems/ship/lsv-a.htm>

<sup>54</sup> GlobalSecurity.org <http://globalsecurity.org/military/systems/ship/images/LSVshorecopy.JPG>

The Joint Modular Lighter System (JMLS) Causeway/Barge. Operates like a modern Mulberry platform. It can be anchored to the shore to serve as a long pier for the offload of vehicles and cargo across the beach, or it can be configured as an offshore platform to transfer vehicles and cargo from sealift vessels to ship-to-shore vessels out in the sea lane. Both take up to twenty four hours to construct, their throughput is approximately one third of using an existing port, and are limited to operations in sea state 3 or less.

Other surface lift vessels that are critical to linking the sea base with the shore are the Landing Craft Air Cushion (LCAC) hovercraft, and the more traditional Landing Craft Utility (LCU), which is a smaller version of the LSV. All of the systems are being upgraded or improved in order to meet the demands of the increased distances and speeds required by STOM and OMFSD.

## **CONCLUSIONS AND RECOMMENDATIONS**

In order to maintain its global influence pursuant to our National Security Strategy, the U.S. must maintain the capability to project its power anywhere in the world. This global power projection capability requires technology, resources, infrastructure, and access to the region in order to deploy, employ and sustain US forces. The sea base provides the RCC with the responsiveness, flexibility, joint interoperability required in 2020 and beyond. The use of a sea base to preposition forces and equipment addresses each of these requirements for projecting land combat power.

A sea base can overcome anti-access or access denial measures taken by an adversary or neutral third party. Land based prepositioned forces must be permitted by the host nation, and they may or may not be effectively located to deal with an unforeseen crisis. Only seabased prepositioned forces provide the RCC the flexibility to project and deliver land combat power to any shore in the world from sovereign U.S territory just 12 miles off the coast: the sea base. It

reduces both physical and political vulnerability in an age of military alliances with political opposition. Sea basing also circumvents any host nation enforced force caps ashore.

There is no remaining undiscovered country on earth; one nation or another has claimed all of the land and parts of the sea. Yet, we now have the technological capability to build a regional mobile sea base with all of the facilities and sovereignty of an island located within international waters. Colonial nations in the 19<sup>th</sup> century annexed far-flung islands to provide a regional base for coaling their ships and projecting their influence. The WWII Pacific island-hopping campaign focused on seizing successive bases in order to project joint combat power against the Japanese home island. Why seize an island to establish an airfield to support seizing the next island if your island can move to where you need it? Just as the aircraft carrier projected air power from a sea base, the JMOB can project joint and interagency national power from a sea base.

A sea base can reduce or eliminate the current reliance on land-based infrastructure by staging, maintaining, and sustaining forces at sea, the requirement for large logistical footprints ashore are significantly reduced. A more capable sea base, such as the JMOB can eliminate the requirement for an APOD or SPOD all together. The sea base provides the expeditionary posture required in Joint Vision 2020.

The sea base can provide the majority of the resources required by the Joint Forces Commander, both in terms of prepositioned materiel and as the terminus of the sea LOC back to the US. The JMOB can also serve as the terminus for the aerial LOC, thus providing full intermodal configuration and transfer capabilities. Prepositioning equipment allows the U.S. to cheat against the tyrannies of time and distance to rapidly respond to any regional crisis. The sea base serves as the junction for theater RSOI, sustainment, and distribution.

With the development of new technologies and systems supporting STOM and OMFSD, the sea base will bypass the beach, ports, and airfields to project land power deep inland. This

technology, specifically long range medium and heavy lift for ship to shore movement, along with the sea base will be the enabling force to complete the STOM and OMFSD visions.

Supporters of the sea base and sea base prepositioning support these conclusions. T.D. Kilvert-Jones of the Center for Security Strategy and Operation, views the JMOB as a critical unique enabler to support the concepts in Joint Vision 2020, as well as requirements for inter agency operations. US Army Colonel Melinda Woodhurst sees the need for prepositioned forces to become more expeditionary to enhance deployment timelines, provide support, and overcome access denial areas. She specifically recommends a transition to the regional flotilla concept to increase responsiveness, flexibility, and survivability.

USMC Major Paul Mogg fully supports the system of systems approach found in regional flotilla concept with service specific components; however, he sees the JMOB as prohibitively expensive with little added value over the JRF. While MAJ Mogg discusses the challenges of funding, constructing, and outfitting a JMOB, he does not address the potential for the JMOB to eliminate the requirement for an APOD, SPOD, or land based staging area.

Additional criticism of the JMOB comes from US Navy Commander Paul Nagy, who sees the JMOB as too costly, too slow, and too vulnerable. However, Cmdr Nagy's argument against the JMOB seems to revolve solely around the concept of the JMOB operating by itself and replacing other platforms rather than integrating into the sea base, sea shield, sea strike systems. He and other authors are very critical of the feasibility of existing or near-term technology solving the difficulties of constructing, sailing, and operating effectively, although the criticism that something will never work often proves shortsighted.

## **Recommendations**

The US military should pursue the JMOB concept immediately. Using existing modular, semi submersible technology, the short-term goal should consist of two modular sections built, launched, and undergoing sea trials within three years of releasing funds for the project. The first

complete JMOB should be outfitted, equipped, on station in the Indian Ocean by 2012, and prepared to be the centerpiece of the standing Joint Task Force. Two additional JMOB systems should be completed by 2020, serving in the Atlantic and the Pacific. To make this concept a capability, three specific issues must be addressed: cost, integration, and organization.

Before such a concept can become a capability, some problems remain to be overcome. Although current technology is capable of producing and maintaining the behemoth of a JMOB, the primary difficulty is the cost. At ten billion dollars for each of the five section JMOB, thirty billion is required to fund the three systems to cover each region: the Atlantic, Pacific, and Indian oceans. Additional costs will be incurred to outfit, maintain, and modernize the prepositioned equipment sets, supplies, and maintenance stocks for each JMOB. However, a projected lifecycle of fifty to sixty years reduces the impact of the initial required investment when compared to the costs of building and supporting land bases abroad.

While the Navy has had the lead in developing the amphibious and sealift shipping, they must not be left to shoulder the burden for research and funding. This strategy maintains the inter-service rivalries and parochialisms that create inefficient redundancies and disjointed capabilities. Beyond the constraints of Title X, U.S. Code, the transformational sea base must be truly joint endeavor with all services participating and contributing. There would even be an opportunity to allow other agencies to contribute in expectation of more inter-agency coordination in future operations.

The JMOB will be a true integration platform, combining all services on a single base. The top landing deck would handle all military and civil reserve aircraft capable of operating on a 5000-foot runway. The docking facilities would service all military and civilian shipping for cargo discharge, transloading, and amphibious ship to shore movement. The storage bays would contain ground combat, combat support, and combat service support equipment, as well as up to 20,000 personnel. Additional internal JMOB facilities would provide joint command and control,



intelligence, medical, maintenance, and sustainment functions for military, coalition, and even interagency elements.

If Transformation is truly the rebalancing of operational maneuver from forward garrisons, from the sea, and from strategic distance, then the JMOB will require a comprehensive review of all doctrine, organization, training, materiel, infrastructure, leadership and education, personnel, and facilities (DOTMILPF) for each of the services and the joint community. While these changes may have difficulties overcome service parochialisms, the JMOB may be just the impetus to drive the services towards the interoperability envisioned within the Transformation guidance.

The composition of the sea base will continue to evolve with changing requirements and resources. While the sea base will continue to consist of a system of systems flotilla of Navy, Marine, and Army equipment, the sea base must become more than a collection of ships. The JMOB demonstrates the potential to be the critical enabler of the operational concepts in Joint Vision 2020: dominant maneuver, precision engagement, focused logistics, and full dimensional protection. The JMOB has the potential to become more than the largest vessel on the planet. It will be a sovereign island of U.S. territory within each region that can maneuver to a position of advantage in international waters, provide deterrence, and promote stability. With interagency involvement, the JMOB could grow beyond a source of military power; it would become a tool for all elements of national power. Although the JMOB may not quite match the fanciful artist's depiction in Popular Mechanics, it is not hard to imagine what a JMOB could look like in the year 2100.



**Figure 18: *Popular Mechanics*' Battle Island<sup>55</sup>**

Within the Transformation of the Department of Defense, the JMOB provides an opportunity project joint expeditionary land combat power in order to defend U.S. interests abroad, deter aggression, reassure Allies with forward presence, and prevail against any adversary.

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<sup>55</sup> *Popular Mechanics* April 2003 website  
<http://www.popularmechanics.com/science/defense/1281531.html>

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